The use of clinical practice guidelines for community-acquired pneumonia in hospitals in Atlantic Canada

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BACKGROUND: Clinical practice guidelines (CPGs) have been shown to improve the care of patients presenting to hospital with community-acquired pneumonia (CAP) and are considered the 'standard of care'. The extent of adoption of CPGs in Canada is unclear.

OBJECTIVE: To determine the use of CPGs by hospitals in Atlantic Canada (Newfoundland, Nova Scotia, New Brunswick, Prince Edward Island).

METHODS: Telephone survey of all hospitals listed in the Canadian Medical Directory as being situated in Atlantic Canada. Hospitals were included if they had all three of the following: an emergency department, x-ray facilities and acute care inpatient beds.

RESULTS: Of 143 hospitals, 93 were included for analysis. Of these, 41 (44.1%) used CAP CPGs. Hospitals were less likely to be using CAP CPGs if they were smaller, rural or community hospitals, or if they did not have an intensive care unit. Of the four provinces, New Brunswick had the most hospitals using CAP CPGs (73.1%), while Newfoundland had the least (17.2%).

CONCLUSIONS: Although larger teaching hospitals are using CAP CPGs, the degree of adoption of CPGs in smaller hospitals in Atlantic Canada is low. Efforts to produce standard CPGs that can be adapted to different sites, as well as implementation strategies, are indicated.

Key Words: *Clinical practice guidelines; Community-acquired pneumonia*

Community-acquired pneumonia (CAP) is a common affliction, and its treatment contributes to a significant portion of health care resource use (1). Considerable variations in treatment have been identified, both in the antimicrobial agents selected and in the thresholds for admission and discharge from hospital (2-5). A number of process variables have been strongly related to outcome (6,7). Clinical practice guidelines (CPGs) have been shown to improve the care of patients with CAP, and have resulted in fewer hospital admissions, shorter hospital stays, shorter periods on intravenous antibiotics and improvement in the aforementioned process variables, such as time to administration of antibiotic and antimicrobial selection (6,8-11). CPGs are considered to be the standard of care by most authorities in the treatment of CAP, yet it appears that CPGs have yet to be adopted in many hospitals. Knowledge of the extent to which CPGs have been adopted is important because it can direct where efforts can be expended to improve the care of CAP patients in Atlantic Canada.

Le recours aux directives de pratique clinique en cas de pneumonie non nosocomiale dans les hôpitaux de l'Atlantique

HISTORIQUE : Il est démontré que les directives de pratique clinique (DPC) améliorent les soins aux patients qui se présentent à l'hôpital parce qu'ils souffrent d'une pneumonie non nosocomiale (PNN) et qu'elles constituent la « norme des soins ». Le taux d'adoption des DPC au Canada n'est pas clair.

OBJECTIF : Déterminer le recours aux DPC dans les hôpitaux de l'Atlantique (Terre-Neuve, Nouvelle-Écosse, Nouveau-Brunswick, Île-du-Prince-Édouard).

MÉTHODOLOGIE : Enquête téléphonique auprès de tous les hôpitaux de la région de l'Atlantique inscrits dans le répertoire médical canadien. Les hôpitaux étaient inclus s'ils possédaient les trois caractéristiques suivantes : une urgence, des installations de radiologie et des lits pour soins de courte durée.

RÉSULTATS : Des 143 hôpitaux, 93 ont été inclus dans l'analyse. De ce nombre, 41 (44,1 %) faisaient appel aux DPC de la PNN. Les hôpitaux étaient moins susceptibles de recourir aux DPC de la PNN s'il s'agissait des petits hôpitaux communautaires, des hôpitaux en région rurale, ou des hôpitaux qui ne disposaient pas d'unité de soins intensifs. Dans les quatre provinces, le Nouveau-Brunswick possédait le plus d'hôpitaux utilisant les DPC de la PNN (73,1%), tandis que Terre-Neuve en possédait le moins (17,2 %).

CONCLUSIONS : Bien que les grands hôpitaux d'enseignement fassent appel aux DPC de la PNN, le degré d'adoption des DPC dans les petits hôpitaux de l'Atlantique est faible. Les efforts en vue de produire des normes de DPC qui peuvent être adaptées aux divers emplacements, de même que des stratégies d'adoption, s'imposent.

METHODS

A telephone survey was conducted of all hospitals listed in the Canadian Medical Directory as being situated in Atlantic Canada. Surveyors requested for interview were, in the following order, the head nurse, the chief of medical staff or the hospital pharmacist. Hospitals were excluded from further analysis if they did not have all three of the following: an emergency department, x-ray facilities and acute care inpatient beds. A structured survey (Appendix 1) was used with a standard set of definitions for each term used (Appendix 2). Answers were entered directly onto a computerized database developed by the database specialist of the Dalhousie University Department of Emergency Medicine (Halifax, Nova Scotia), and data were analyzed using Microsoft Access (Microsoft Corporation, USA).

RESULTS

One hundred forty-three hospitals were surveyed, and 50 were excluded (Table 1). Of the remaining 93, the distribution by

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TABLE 1
Reasons for exclusion of facilities

Reason for exclusion	Number excluded
No emergency department	32
No x-ray facilities	7
No acute care beds	9
No contact achieved	2
Total excluded (of 143 possible contacts)	50

TABLE 2
Community-acquired pneumonia (CAP) clinical practice guideline (CPG) use according to selected institutional variables

Variable		CAP CPG program in place			
		Yes (n) (% total)	No (n) (% total)	Unknown (n) (% total)	Total (n) (% hospitals)
Province	NB	19 (73.1)	7 (26.9)	0	26 (28.0)
	NFLD	5 (17.2)	22 (75.9)	2 (6.9)	29 (31.2)
	NS	15 (45.5)	14 (42.4)	4 (12.1)	33 (35.5)
	PEI	2 (40.0)	3 (60.0)	0	5 (5.3)
Acute care beds	<20	10 (24.4)	28 (68.3)	3 (7.3)	41 (44.1)
	20-50	16 (55.2)	12 (41.4)	1 (3.4)	29 (31.2)
	50-100	6 (54.5)	4 (36.4)	1 (9.1)	11 (11.8)
	100-300	6 (75.0)	2 (25.0)	0	8 (8.6)
	300+	3 (100)	0	0	3 (3.2)
	Unknown	0	0	1 (100)	1 (1.1)
Community	Rural	31 (38.3)	44 (54.3)	6 (7.4)	81 (87.1)
	Urban	10 (83.3)	2 (16.7)	0	12 (12.9)
Hospital type	Community	31 (39.7)	42 (53.8)	5 (6.4)	78 (83.9)
	Teaching	10 (66.7)	4 (26.7)	1 (6.6)	15 (16.1)
	Total	41 (44.1)	46 (49.5)	6 (6.5)	93 (100)

NB New Brunswick; NFLD Newfoundland; NS Nova Scotia; PEI Prince Edward Island

province is shown in Table 2. Of the total number of hospitals, 44.1% reported using CAP CPGs, 49.5% did not and 6.5% did not know whether they did. Hospitals with more than 300 beds (n=3) (Table 2) were universally using CAP CPGs, with the proportion of users declining steadily with the number of beds. Urban teaching hospitals and those with an intensive care unit were significantly more likely to be using CAP CPGs (Table 2). Forty-four per cent of hospitals using CAP CPGs reported that their program had been in place for one to two years, while 48.8% had implemented their program within the previous year. Regarding the source of the CPGs, 70.7% reported internal development. Of the 29.3% not internally developed or unknown, 83.3% (10 of 12) were rural hospitals or those with less than 50 beds. Of hospitals without CPGs, 96.2% (50 of 52) declared that they would be interested in assistance with implementation of a program.

DISCUSSION

A large proportion of smaller hospitals in Atlantic Canada have yet to adopt CAP CPGs. Of the different provinces, New Brunswick had the most hospitals using CAP CPGs (73.1%), while Newfoundland had the least (17.2%) (Table 2). The disparity between the proportion of hospitals identified as having a lower chance of having a CAP CPG is insufficient to explain

TABLE 3
Number of hospitals in each province, in rural communities, with less than 20 beds or without an intensive care unit

Province	With one or more of the above variables, n (%)	With none of the above variables, n (%)	Total
New Brunswick	20 (76.9%)	6 (23.1%)	26 (28.0%)
Newfoundland	27 (93.1%)	2 (6.9%)	29 (31.2%)
Nova Scotia	30 (90.9%)	3 (9.1%)	33 (35.5%)
Prince Edward Island	5 (100%)	0	5 (5.4%)

these differences (Table 3), and likely reflects both differences between provincial styles of practice and the degree of influence of academic centres in each province.

With limitations in manpower and academic infrastructure, smaller community and rural hospitals look to academic and referral centres for guidance with reference to best clinical practice. Several authors have argued that it is indeed the responsibility of academic centres to provide such support (12,13). It would appear that with regard to CAP management, at least in Atlantic Canada, we are failing in this role.

The development of a generic CAP CPG is indicated. This needs to be flexible and adaptable to accommodate idiosyncrasies in different hospitals, areas and practice patterns where it is introduced, while still ensuring that the best clinical practice, both practical and available, is maintained. Final versions for each institution would ideally be completed in consultation and collaboration with health care providers at the target sites. Ensuring compliance with CPGs has also been found to be challenging (14-16). Evidence-based implementation strategies, including the involvement of local practitioners in the maintenance of CPG adherence, education sessions and strategies to trigger CPG use in appropriate cases, should all be offered in conjunction with the CPGs.

Weaknesses in the study include the 6.5% of cases in which the person being questioned was uncertain about whether CAP CPGs were in use at their hospital. We submit that introduction of any CPG is, almost by definition, a multidisciplinary decision, and it would be very unlikely for CPGs to be in use without the head nurse, chief of staff and hospital pharmacist all being aware of it. Presuming that 'unknown' may safely be recorded as 'no', our figures would reflect a 55.9% 'no CPG' rate.

Data from this study only demonstrate the situation in Atlantic Canada with regard to CAP CPGs, and we have no way of knowing whether this reflects the use of these guidelines in the rest of Canada. Given that the proportion of smaller hospital CPG use was similar in all four provinces surveyed, it is likely that this observation could be made in other provinces.

Because the level of CAP CPG use was lowest in the smallest (less than 20 beds) hospitals, we did not solicit information as to how many cases of CAP were treated at each hospital each year, so we cannot estimate the impact of introducing CAP CPGs to each hospital. Having said that, CPGs may be of particular use in institutions in which practitioners are not experienced in CAP treatment.

Finally, as mentioned above, simply developing CAP CPGs for use in smaller hospitals does not ensure that better processes

of care for CAP patients are followed. We did not assess implementation and maintenance strategies used, nor did we compare aspect of care or outcome variables such as length of stay, time to first antibiotic or mortality between institutions with and without CPGs in place. Such studies are indicated, as are the ongoing evaluation and refinement of implementation strategies, to ensure the use of CPGs in appropriate cases.

CONCLUSIONS

Although larger teaching hospitals are using CAP CPGs, the degree of adoption of these guidelines in smaller hospitals in Atlantic Canada is low. Efforts to produce standard CAP CPGs that can be adapted to different sites, as well as implementation strategies, are indicated.

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APPENDIX 1

Hello, my name is _____. On behalf of the Department of Emergency Medicine at Dalhousie University in Halifax, I am conducting a brief survey on the use of clinical practice guidelines in the use of community-acquired pneumonia in hospitals in Atlantic Canada. There are only seven to 13 questions, and it should take a brief time to complete. Would you mind if I went ahead?

What province is your institution in?	Nfld	NB	NS	PEI
Are you situated in a rural or urban setting? (see def.)	Rural	Urban		
Is yours a teaching or community hospital? (see def.)	Teaching	Community		
How many acute care inpatient beds do you have?	<50	50-100	100-300	>300
Do you have an intensive care unit? (see def.)	Yes	No		
Does your hospital currently use a CAP CPG? (see def.)	Yes	No		

Yes

If Yes:

How many years has it been in place? <1yr. 1-2 2-3 >3 Unkn.

Was it developed internally? Yes No Unkn.

If not, by whom? Referral center Unkn.

Is the use of the CPG audited? Yes No Unkn.

If audited, on what basis? Ad Hoc Ongoing/prospective

If audited, could you estimate the compliance? Compliance _____ Unkn.

No

If No:

Would you be interested in assistance with implementing a program? Yes No

CAP Community-acquired pneumonia; CPG Community practice guideline; NB New Brunswick; Nfld Newfoundland; NS Nova Scotia; PEI Prince Edward Island; Unkn Unknown

APPENDIX 2

Term used	Definition
Clinical practice guideline	A document officially endorsed by the hospital that guides (at least) admission, medication, choice and process of care for the management of community-acquired pneumonia
Intensive care unit	At least two beds in which patients can be maintained on a ventilator and inotropic support
Teaching hospital	Trainees permanently involved in providing clinical services
Developed internally	Developed by permanent hospital staff
Audit compliance	Clinical practice guideline use audited by internal staff
Rural	The population of the community is greater than 10,000 and they are greater than 80 km from a community with greater than 50,000 people

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